[0029] FIG. 7C is an underside of the gas turbine engine of FIG. 7A opposite FIG. 7B looking forward to illustrate the piggy-back of auxiliary components with the intermediate case.

DETAILED DESCRIPTION OF THE DISCLOSED EMBODIMENT

[0030] FIG. 1A illustrates a general partial fragmentary schematic view of a gas turbofan engine **10** suspended from an engine pylon **12** within an engine nacelle assembly N as is typical of an aircraft designed for subsonic operation.

[0031] The turbofan engine **10** includes a core engine within a core nacelle C that houses a low spool **14** and high spool **24**. The low spool **14** includes a low pressure compressor **16** and low pressure turbine **18**. The low spool **14** drives a fan section **20** connected to the low spool **14** either directly or through a gear train **25**.

[0032] The high spool **24** includes a high pressure compressor **26** and high pressure turbine **28**. A combustor **30** is arranged between the high pressure compressor **26** and high pressure turbine **28**. The low and high spools **14**, **24** rotate about an engine axis of rotation A.

[0033] Airflow enters the fan nacelle N which at least partially surrounds the core nacelle C. The fan section **20** communicates airflow into the core nacelle C to the low pressure compressor **16**. Core airflow compressed by the low pressure compressor **16** and the high pressure compressor **26** is mixed with the fuel in the combustor **30** where is ignited, and burned. The resultant high pressure combustor products are expanded through the high pressure turbine **28** and low pressure turbine **18**. The turbines **28**, **18** are rotationally coupled to the compressors **26**, **16** respectively to drive the compressors **26**, **16** in response to the expansion of the combustor product. The low pressure turbine **18** also drives the fan section **20** through gear train **25**. A core engine exhaust exits the core nacelle C through a core nozzle **43** defined between the core nacelle C and a tail cone **33**.

[0034] The engine static structure **44** of FIG. **1**B generally has sub-structures including a case structure often referred to as the engine backbone. The engine static structure **44** generally includes a fan case **46**, an intermediate case (IMC) **48**, a high pressure compressor case **50**, a thrust case **52**, a low pressure turbine case **54**, and a turbine exhaust case **56** (FIG. **1**B). The fan section **20** includes a fan rotor **32** with a plurality of circumferentially spaced radially outwardly extending fan blades **34**. The fan blades **34** are surrounded by the fan case **46**. The core engine case structure is secured to the fan case **46** at the IMC **48** which includes a multiple of circumferentially spaced radially extending struts **40** which radially span the core engine case structure and the fan case **46**.

[0035] The engine static structure **44** further supports a bearing system upon which the turbines **28**, **18**, compressors **26**, **16** and fan rotor **32** rotate. A #1 fan dual bearing **60** which rotationally supports the fan rotor **32** is axially located generally within the fan case **46**. The #1 fan dual bearing **60** is preloaded to react fan thrust forward and aft (in case of surge). A #2 LPC bearing **62** which rotationally supports the low spool **14** is axially located generally within the intermediate case (IMC) **48**. The #2 LPC bearing **62** reacts thrust. A #3 high spool thrust bearing **64** which rotationally supports the high spool **24** and also reacts thrust. The #3 high spool bearing **64** is also axially located generally within the IMC **48** just forward of the high pressure compressor case **50**. A #4 bearing **66** which rotationally supports a rear segment of the high spool **14** reacts only radial loads. The #4 bearing **66** is axially located generally within the thrust case **52** in an aft section thereof. A #5 bearing **68** rotationally supports the rear segment of the low spool **14** and reacts only radial loads. The #5 bearing **68** is axially located generally within the thrust case **52** just aft of the #4 bearing **66**. It should be understood that this is an exemplary configuration and any number of bearings may be utilized.

[0036] The #4 bearing **66** and the #5 bearing **68** are supported within a mid-turbine frame (MTF) structure **70** to straddle radially extending structural struts **72** which are preloaded in tension (FIGS. **1**C-**1**D). The MTF **70** provides aft structural support within the thrust case **52** for the #4 bearing **66** and the #5 bearing **68** which rotatably support the spools **14**, **24**.

[0037] A dual rotor engine such as that disclosed in the illustrated embodiment typically includes a forward frame and a rear frame that support the main rotor bearings. The intermediate case (IMC) **48** also includes the radially extending structural struts **40** which are generally radially aligned with the #2 LPC bearing **62** (FIG. **1**A). It should be understood that various engines with various case and frame structures will benefit from the present invention.

[0038] The turbofan gas turbine engine **10** is mounted to aircraft structure such as an aircraft wing through an engine mounting configuration **80** defined by the pylon **12**. The engine mounting configuration **80** includes a forward mount **82** and an aft mount **84** (FIGS. **2**A-**2**E). The forward mount **82** is secured to the IMC **48** and the aft mount **84** is secured to the MTF **70** at the thrust case **52**. The forward mount **82** and the aft mount **84** are arranged in a plane containing the axis A of the turbofan gas turbine **10**. This eliminates the thrust links from the intermediate case, which frees up valuable space beneath the core nacelle and minimizes IMC **48** distortion.

[0039] Referring to FIG. **3**, the engine mounting configuration **80** reacts the engine thrust at the aft end of the engine **10**. The forward mount **82** supports vertical loads V and side loads S. The forward mount **82** includes a shackle arrangement which mounts to the IMC **48** at two points **86**A, **86**B. The forward mount **82** is generally a plate-like member which is oriented transverse to the plane which contains engine axis A. Fasteners are oriented through the forward mount **82** to engage the intermediate case (IMC) **48** generally parallel to the engine axis A.

[0040] The aft mount **84** includes a beam transverse to an engine axis A having a first arm **88**A and a second arm **88**B that mount to the MTF **70** at the thrust case **52** (FIGS. **2**A-**2**E). It should be understood that the first arm **88**A and the second arm **88**B may alternatively mount to another rear area of the engine **10** such as the exhaust case or other frame area. It should also be understood that the MTF may alternatively be used with any engine case arrangement.

[0041] The first arm **88**A includes an attachment fastener **90**A and the second arm **88**B includes an attachment fastener **90**B defined along a respective fastener axis F**1**, F**2** which extends radially inward to intersect the engine axis A. It should be understood that various bushings, vibration isolators and such like may additionally be utilized herewith.

[0042] The first arm **88**A supports a link load L**1**, a sideload S and a thrust load T**1**. The second arm **88**B supports a link load L**2** and a thrust load T**2**. The link loads L**1**, L**2** are torque loads generated by the design of the engine **10**. The aft mount **84** is rotatable about an aft mount axis M (FIG. **2**D) which vertically intersects the engine axis A. Rotation of the aft